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*Leptobryum pyrifforme* in its sterile state is apparently common in greenhouses, but is so different in appearance from the fruiting form as to be recognized only occasionally. Probably it will not be difficult to find the form bearing brood bodies in other localities. A photograph of the Miami plants ( $\times 10$ ) accompanies these notes.

NEW DORP, N. Y., NOV., 1914.

## FONTINALIS UMBACHII CARDOT

E. J. HILL

This water moss was described by Cardot from material found in the Des Plaines River at Romeo, Illinois, by Prof. L. M. Umbach. It was published, together with a plate, in the Minnesota Botanical Studies under the caption "Two new species of *Fontinalis*," the other being *F. Holzingeri* Card. I have never seen any mention of it in the BRYOLOGIST. The name does not appear in the Ten-Year Index by Mrs. Smith, nor do I find it in any volume not covered by it. Having collected it in the type locality and since then in two more streams in the neighborhood, some account may be acceptable to bryologists, as it is said by M. Cardot to occur in localities farther north in Minnesota and Wisconsin, and is, therefore, likely to be met with by others. Since the Minnesota Botanical Studies may not be very accessible to all readers of the BRYOLOGIST, I will include a translation of the Latin description of Cardot.

"*Fontinalis Umbachii* Cardot.\* Dry plant rather rigid, dark below, lurid-green above. Stem denuded at base, 7-15 cm. long, irregularly pinnate, the branches remote, spreading or erect-spreading, the point cuspidate. Leaves somewhat rigid, erect-spreading, convolute-imbricate at the apex of the stem and branches, dimorphous; cauline large, oblong-lanceolate, gradually broadly and obtusely acuminate, entire, about 5 mm. long, 1.5-1.75 broad at base; branch leaves much smaller, somewhat close, a little curved and sub-homomallous at the apex of the branches, narrowly lanceolate, canaliculate as usual by inflexed margins, gradually obtusish-acuminate, entire, 3-4 mm. long, 0.5-.075 wide at base. Alar cells subquadrate or subhexagonal, slightly dilated, the others linear, subflexuose, moderately chlorophyllose, the thickish walls quite firm, the upper shorter. Fruiting part unknown."

The author adds that he recognized in his herbarium some stems of the same species collected in 1895 by Prof. Conway MacMillan in northern Minnesota near the International Boundary. He also compares it with *F. Missouriica* Card., which it closely approaches, but from which "it is easily distinguished by its shorter and rather rigid stems, its more shortly acuminate stem leaves, which are narrower at base and entire at apex."

Though I received from Prof. Umbach a specimen from his type collection, the type locality was not visited till June, 1906. It is at the head of an island (Isle la Cache of the early French voyageurs), which, at this point, divides the Des Plaines, the western channel of which usually becomes almost dry in summer. The shallow water of the river flows over a limestone bed with pieces of loosened rock or boulders from the bordering drift scattered over it. To these

\*I. c. Third Series, Part II. 129. 1903.

and to the irregularities in the surface of the bed the moss clings, its stems frequently becoming dry and exposed as the water falls away. Some of my collection made at this time was more robust than that given in the description by Cardot, the stems running from 8–25 cm. long, the stem leaves  $4.5\text{--}5.4 \times 1.2\text{--}1.6$  mm., the branch leaves  $3.5\text{--}4.2 \times .85\text{--}1$  mm. Those of the stems are gradually pointed, acutish, entire; those of the branches similar, but some obscurely denticulate.

In 1911 another station for it was found in a narrow gorge made in the limestone by a stream that enters "The Sag" at Sag Bridge, about 12 miles southwest of Chicago. "The Sag" is a depression or valley that marks the course of one branch of the outlet of the Glacial Lake Chicago, when the waters of the upper lakes flowed southward through the valley of the Des Plaines and Illinois rivers. Sag Bridge is 10 miles northeast of Romeo. The little brook is commonly dry in summer, or without running water, but the bed is generally moist from the presence of occasional pools and from the deep shade of its vertical sides and overhanging trees and bushes. The moss adheres to the stones in its bed, roughened by holes and shelves in the rock, made by the rapid current. It was intimately associated with *Octodicerias Julianum* (Savi) Bridel., the two much intermixed in their growth.<sup>1</sup> Being a very slender form, the stems usually 4–8 cm. long (the longest noted being but 13 cm.) with correspondingly smaller leaves that were more acute and generally denticulate at the point, I was in doubt about its identity with the moss at Romeo. Some specimens were, in consequence, sent to M. Cardot, who pronounced them a form of *F. Umbachii*, differing mainly in the sharper and more denticulate leaves. Specimens were also sent to Rev. C. H. Demetrio, Emma, Missouri, to compare with *F. Missouriica*. Examples of this and of *F. filiformis* Sull. & Lesq. were kindly forwarded to me by him, so that I could make comparisons. The form at Sag Bridge quite closely approaches *F. Missouriica* in its slender stems (probably due in the main to rather starved conditions of growth), and in its more pointed, slightly denticulate leaves, but they are more canaliculate, becoming quite tubulose on the branches, so that at the tip they are long-pointed, some almost setaceous.

Soon after I came upon the moss in a third station, while examining the plants of Long Run, a creek which once flowed directly into the Des Plaines a mile or two below Romeo, but now into the Illinois and Michigan Canal which cuts it off from the river. The station is about three miles above the mouth of the creek. The stream is perennial from this point down, being fed by numerous springs. Though the bed is in limestone farther down, here it is in the drift, but well supplied with gravel and large water-worn pebbles from the morainic hills in close proximity, the mass of which is limestone or Joliet gravel. At the place where the moss was most abundant the pebbles were so numerous and heaped together as to form a little rapid. Here it clung to the stones in large wads. For a short distance below it adhered to those scattered in the deeper and more quiet waters. A careful search for a long distance below,

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<sup>1</sup> In 1909 I found a similar close association of *Octodicerias* with *Fontinalis Novae-Angliae* Sulliv. in a woodland streamlet about a mile west of Saegertown, Pa.

though not to its mouth, revealed no more stations for it. The stems were of unusual size, the longest noted 40 cm. long, but commonly 15–30 cm. Examples of this were likewise sent to M. Cardot, who stated in a letter that similar robust forms had been sent by Cheney from northern Wisconsin. The leaves were about the same in size as those from the type locality at Romeo, entire or slightly denticulate at the point. The stems are much divided, a single one when separated from the mass and floated so as to display its form showing a surprising number of branches to be held by the hair-like basal part. The longest and most divided were found in the most rapid current. In cross-sections the stem is broadly oval, the shorter diameter commonly from 0.2–0.4 mm., the longer from 0.25–0.55 mm. The rind is of dark brown, very thick-walled cells, their lumen often nearly closed or entirely disappearing, the outermost cells usually the more open ones. The ground-tissue consists of large, thin-walled, open cells, tinged with yellow. The central strand is lacking, or none was found as far as examined. The stem seems well constructed to bear longitudinal strain, and to yield to compression laterally as it waves about in the running water. It generally curves a little at the base so as to bring it parallel with the surface of the substratum, sometimes as much as a centimeter. This portion is also densely covered with brown rootlets, 18–30 $\mu$  in diameter, by means of which it holds to the stone. In some cases it is reenforced by one or two short branches, covered like the end of the main stem with rootlets, in this way forming a kind of foot to anchor it. Since several stems, when growing in such masses, generally start from closely adjacent points, their interlocking basal parts form a meshwork resembling a felty disk when removed from the rock, in this manner doubtless aiding one another in maintaining their hold.

From all at present known, *F. Umbachii* is of northern distribution, being found in the region of the upper Great Lakes and adjacent parts of the basin of the Mississippi. Even the localities of the three stations near Chicago may date from the time when they made a part of the lake system, and the upper lakes were drained southward through the Chicago outlet.

CHICAGO, ILLINOIS.

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## SULLIVANT MOSS SOCIETY

### Report of the President

The President is able to report a continued interest in the work of the Sullivan Moss Society on the part of its members. Under the careful editorship of Dr. O. E. Jennings, the *BYOLOGIST* has maintained the high degree of excellence which the Society has been led to expect. The current volume, exclusive of the index, numbers 95 pages and is, therefore, of the same size as the preceding volume. Twenty-five original articles and two obituary notices have been published during the year; the illustrations include thirteen plates and seventeen figures in the text. Of the original articles seven relate to the mosses, seven to the hepatics, and eleven to the lichens. The articles on the mosses were written by seven different contributors, those on the hepatics by five, and those on the lichens by four. These figures, if compared with the corresponding